

PROPERTY PLANNING COMMON ELEMENTS

COMPONENTS OF MASTER PLANS

RECREATION ACTIVITIES AND THEIR MANAGEMENT

Impacts Associated with Outdoor Recreation

Introduction

This analysis describes the impacts and outcomes associated with recreational use and management on DNR properties. Impacts associated with recreation arise from the construction and management of facilities (including trails) as well as their use. This assessment addresses both types of impacts, focusing on those activities that have the potential to have substantive social or environmental impacts. Participation in all outdoor activities has economic costs and benefits, which are also described here.

The department follows a series of best management practices (BMPs) in developing and operating facilities that support recreational use. These practices are designed to minimize impacts throughout the construction, use and management process. As such, when BMPs are followed only minor, if any, impacts are expected. Best management practices are described in the following documents:

- All-Terrain Vehicle Trails on Department Lands Manual Code (2527.9)
- ATV Route Guideline and Suggestions (A Community Official's Handbook). Publication #LE-109 4/03
- Canoe Campsites and Routes Handbook (2512)
- Design Standards Handbook (8605.1)
- DNR property managers guidance (internal website)
- Invasive species BMPs: <http://dnr.wi.gov/topic/Invasives/bmp.html>
- Pesticide Use Manual Code (4230.1)
- Recreation Area Operations Handbook (2505.1)
- Shooting Ranges in Wisconsin: Strategic Guidance, 2014-2019
- Trails Handbook (2540.5)

Universal Concerns

The social and environmental impacts associated with participation in most outdoor recreation activities are usually minor, temporary, and localized. However, depending on circumstances even activities that typically have minimal impacts can have outcomes that are more problematic. The following concerns pertain to most if not all types of recreation.

The spread of invasive species is an increasingly challenging issue for native habitats. As people and goods are transported greater distances with greater frequency, the introduction of aquatic and terrestrial species into new areas has grown substantially. In many cases, these newly established plants and animals will die out or have minimal impact to the local ecosystem. However, in some instances these individuals spread rapidly and have large effects on the structure and composition of the flora and fauna in an area. In some cases, these problematic species are native to a region but become invasive due to altered ecological conditions; in others, the species are introduced from distant environments with no natural means to control their population growth.



Invasive species can be spread by a wide range of means related to recreation including clothing, boots, hooves, paws, tires, decoys, anchors, boats, boat trailers, live wells, firewood, and various other ways. As such, participants in all outdoor activities can inadvertently spread invasive species. Techniques to minimize impacts include education and signage, wash stations for ATVs, UTVs, OHMs, and mountain bikes, boot cleaning brushes, boat and trailer washing areas, and monitors and signage at popular launch sites.

Other impacts that can occur as a result of people participating in these activities include such things as: soil compaction, inadvertent disturbance to breeding animals and other sensitive resources, air emissions resulting from people traveling in vehicles to their recreation destination, and littering. These impacts are nearly always minor, temporary, and localized. For example, people seeking a geocache can inadvertently walk through sensitive areas and damage plants. Campers can accidentally start small wildfires. Or, anglers can cause inadvertent mortality to non-target fish due to poor hook sets.

Of course, the potential for inappropriate participation in any activity can occur which can cause more substantive impacts, but given the nature of most recreation activities, these instances tend not to cause long-lasting harm to the environment. For example, mountain bikers, horseback riders, ATV riders, and snowmobilers that leave designated trails can cause impacts, considerable in some cases, to habitats and species. Bird watchers wanting to get a close-up view of a rare bird can repeatedly disturb the very target they seek. Although some of these impacts can be substantial, they are typically confined to a small area or narrow window of time.

Given the wide variety of recreation activities that take place on department lands and the frequency of visitation, the relatively few conflicts that actually occur between and among recreationists is somewhat surprising. But conflicts do happen. Most occur because of a simple lack of recognition that others are nearby. For example, sounds of gunfire in an area can upset hikers, bikers, or others that didn't realize hunting was taking place. Or, hikers or geocachers can disturb hunters that are patiently waiting for game to come close. In addition, crowding and overuse can be a problem (e.g., at popular boat launches). In some cases, visitors to department lands leave state-owned land and enter private property.

Other conflicts can be more pronounced and are often rooted in a personal dislike for a particular activity. Some people do not support hunting, trapping, fishing, motorized activities, dog training, and other activities and are especially opposed to them occurring on public lands.

Recreation Activities with Minimal Adverse Social or Environmental Impacts

When education, signage, enforcement of regulations and best management practices are used in developing and managing recreation facilities (including trails), the following activities are considered to have minimal environmental or social impacts:

Trail-based activities in upland settings

- Bicycling – bicycle touring, off-road bicycling, mountain biking, and winter/fat-tire biking
- Cross-country skiing and snowshoeing
- Dog walking, dog sledding and skijoring
- Hiking, walking, or running

Non-trail-based activities in upland settings

- Gathering wild edibles
- Geocaching



- Hunting
- Nature photography and education
- Rock climbing
- Trapping
- Wildlife (including bird) watching

Activities occurring at dedicated places

- Camping
- Target shooting – archery

Water-based activities

- Canoeing and kayaking
- Fishing
- Motor boating
- Swimming in lakes and rivers

Although substantial impacts from these activities are unlikely, if an activity is proposed in a way or at a location that appears likely to result in extensive or sizeable social or environmental impacts, the department will evaluate options and their associated outcomes to identify an appropriate course of action. The amount of public interest and controversy will be an important factor in determining if additional review is needed.

Recreation Activities with Potential for Substantial Adverse Social or Environmental Impacts

Participation in the activities listed here has the potential to cause negative social or environmental impacts or be controversial depending on site-specific circumstances. To be clear, participation in these activities has the potential for adverse impacts; through appropriate design and management of trails and other facilities, signage, and education, adverse outcomes can be minimized in many cases to the extent that any impacts are minor, temporary, or localized.

To ensure that the department, the Natural Resources Board, and the public understand the nature and extent of potential impacts, the department will undertake additional analyses before providing new opportunities for the following activities on department lands where they are not already authorized. These activities include:

- 4WD vehicle driving on trails or routes
- ATV/UTV riding on trails or routes
- Camping
- Dog training and trialing
- Horseback riding on trails
- Off-highway motorcycle riding on trails or routes
- Snowmobiling on trails or routes
- Target shooting – firearm



Possible Impacts Associated with Recreation Facilities and Recreation Participation on Department Properties

Impacts to the Physical Environment

Land and Geologic Resources

Construction and Operation Related Impacts

For nearly all types of recreation facilities – from campgrounds to observation decks to boat launches – the construction process will result in some soil disturbance and compaction. The level to which this occurs is dependent on the activity. For example, when a new camping area (especially a developed or rustic campground) is created, the soil disturbance area can be many acres in size to provide campsites, drives, sanitation stations, and other facilities. The department follows all statutes regarding stormwater runoff on construction sites and revegetates all non-building and non-imperious surfaces. Electrical, sewer, and water service requires ground disturbances.

The impacts associated with any given road are dependent on the classification. Primitive road construction and maintenance entails few impacts during construction beyond minor amounts of vegetation clearing and small amounts of fill being used. Fully developed roads require extensive grading, surface modification, and vegetation clearing.

Soil erosion can be a concern both during the construction and management of the trail facilities. The department is subject to all stormwater control and erosion statutes and prepares erosion control plans as required (NR 216.46, Wis. Admin. Code). During construction, the department strives to minimize soils exposed to erosion. In sloped or otherwise vulnerable areas, the department installs armoring measures to reduce erosion potential.

Water stations available at trailheads, picnic areas, campgrounds, and other facilities require small wells that tap bedrock or aquifer layers. These wells will not be high-capacity and will be permitted in accordance with NR 812, Wis. Admin. Code.

Construction of a shooting range typically includes extensive grading and berming of soil. Maintenance may include periodically removing spent casings and projectiles from the range.

Participation Related Impacts

Depending on soils and topography, trails and routes for ATVs, UTVs, OHMs, and 4WD vehicles can be susceptible to erosion and displacement of materials, especially on curves. These impacts can generally be addressed by reducing speeds and through design and maintenance. ATV, UTV, OHM, and 4WD riders that leave designated trails and enter natural areas can cause extensive and long-lasting damage. Although the number of riders that illegally enter these areas and cause damage can be very small, the magnitude of the impacts can warrant special attention by locating trails and routes away from sensitive sites to the degree possible. The use of trail ambassadors and monitoring can be an effective management approach to minimize problems.

Snowmobiles can cause impacts to soil and trail surfaces when there is inadequate snow cover. Machines with studded tracks can cause damage to wood bridges or asphalt surfaces.

The impacts of camping are directly correlated with the number of campsites at a campground and the level of development of supporting facilities. Modern campgrounds at popular state properties can essentially become



small villages on summer weekends with hundreds of people staying in a relatively small area. Use in these areas can create sounds, commotion, and smoke from fires. Rustic and primitive camping opportunities can create the same types of impacts but at reduced levels given the smaller number of campers, additional spacing, and more limited facilities provided.

Air Resources

Construction and Operation Related Impacts

Equipment used in the construction of recreation facilities can generate air emissions, dust, and various amounts of sound. Air emissions are present only during active construction.

Participation Related Impacts

ATVs, UTVs, OHMs, 4WD vehicles, and snowmobiles can generate dust and emissions that affect air quality. These emissions include hydrocarbons, carbon monoxide, nitrogen oxides, and particulate matter. On an individual basis, these vehicles can have very high emission rates. For example, a two-stroke ATV or motorcycle can emit as much pollution in one hour as over 30 automobiles operating for the same period of time. Similarly, a snowmobile can emit as much as nearly 100 automobiles (EPA 2001). Exhaust emission standards for street-legal and motorized recreation vehicles are established by the U.S. Environmental Protection Agency.

Shooting ranges can have impacts to air quality and can be a source of lead in the environment. On ranges, inhalation is one pathway for lead exposure since shooters are exposed to lead dust during the firing of their guns. Because wind is unlikely to move heavy lead particles very far, airborne dust is generally considered a potential threat only when there are significant structures that block air flow on the firing line (EPA 2005). Periodic lead reclamation can address some concerns and can be a source of material to recycle into new munitions.

Campgrounds can generate sounds and emissions from generators, campfires, and barbeque grills. Burning wood and charcoal releases nitrogen oxides, carbon monoxide, particulate matters, carbon dioxide, and other compounds. Some people sitting by a campfire or staying at a busy campground can experience eye and respiratory inflammation.

Water and Wetland Resources

Construction and Operation Related Impacts

The development and maintenance of boat launches can have a variety of impacts on the environment, including clearing shoreline vegetation, disturbing the lakebed during construction of a developed boat ramp, placement of a loading/unloading dock, creation of impervious surfaces that drain into wetlands or surface waters, and placement of riprap to address erosion issues. Motorized boat launches tend to have larger impacts than non-motorized boat launches due to the larger extent of facilities associated with them. Motorized boat launches typically have paved approach pads and concrete or gravel launch areas. Additional facilities may include parking areas, vault or portable toilets, picnic areas, and docks.

The construction of swimming beaches may alter the shoreline of the waterbody. Both riparian and shallow water habitat may be lost where swimming beaches are constructed. Habitats affected could include the full range of wetland types, emergent aquatic, and submergent aquatic. Due to these potential impacts, a permit is required for the placement of a sand blanket in a navigable water way (s. 30.12, Wis. Stats.). The visual aesthetic of the



shoreline is also changed when a swimming beach is constructed. Additional facilities associated with swimming beaches (e.g., parking lots, picnic areas, toilets, and changing areas) may have additional environmental impacts. Large swimming beaches may require additional analysis during the planning and design phase.

In Wisconsin, water and wetland crossings and modifications (including filling) are regulated activities. Department guidelines to avoid and minimize impacts at wetland and waterway crossings of motorized recreational vehicle trails are described in the Design Standards Handbook. Practices to minimize impacts include bridge orientation and entry approach, culvert placement and associated fill, use of elevated boardwalks, and puncheons. Potential impacts can include filling wetland soils, sinking anchor structures into water and wetlands, and erosion.

Lead can be introduced into surface and groundwater at shooting ranges in one or more of the following ways:

- Lead oxidizes when exposed to air and dissolves when exposed to acidic water or soil
- Lead bullets, bullet particles, or dissolved lead can be moved by storm water runoff
- Dissolved lead can migrate through soils to groundwater

These can be influenced by the amount and acidity of precipitation, contact time, soil types, vegetation, and other factors (EPA 2005).

Participation Related Impacts

Trail riders that leave designated trails and enter wetlands and waterbodies can cause extensive and long-lasting damage including soil compaction, rutting, alteration of surface water flows, erosion, spread of invasive species, and pollution. Although the number of riders that illegally enter these areas and cause damage can be very small, the magnitude of the impacts can warrant special attention to locating some types of trails and routes away from wetlands and waterbodies. The use of trail ambassadors and monitoring can be an effective management approach to minimize problems.

Impacts to Biological Resources

Terrestrial Resources

Construction and Operation Related Impacts

Construction and maintenance of trails, campgrounds, parking areas, observation decks, shelters, or similar structures can have an impact on wildlife due to vegetation clearing and the sounds generated by machinery. New trail development through previously undisturbed areas can lead to minor habitat fragmentation which may lead to impacts on species distribution.

Construction and maintenance of trails raises the risk of invasive vegetation spreading. Seeds or cuttings of invasive plants on equipment may be transported to areas not yet colonized. Mowing trails may also aid in the spread of invasive species. Maintenance such as vegetation mowing and clearing also has potential to destroy nesting or other important sites for wildlife. Pesticide use can have adverse health impacts to non-target species, including humans.



Participation Related Impacts

Motorized recreation activities can generate sounds and commotion that can affect wildlife. These impacts are mostly an issue in the vicinity of trails and routes but can affect nearby wildlife by causing them to leave an area. This can be a particular concern during the breeding season. Depending on the number, frequency, and speed of riders passing by an area, this activity can cause outcomes such as nest abandonment.

Participants in all types of recreation can inadvertently spread seeds and other material of invasive species. The establishment of wash-stations, boot scrubbing brushes, and other techniques at sites that receive intensive use can be effective at reducing these impacts.

Conventional wisdom has associated horse use with the spread of invasive plants. Although certainly possible, the vast majority of horse owners work to ensure that their animals don't eat or spread invasive plants, in large part motivated by a desire to prevent these species spreading to their own pastures and lands. Only a limited amount of research on this topic has been done, but it appears to indicate that horse droppings are not a meaningful source of the spread of invasive plants (Gower 2008; Campbell and Gibson 2001; Quinn et al. 2010; Wells and Lauenroth 2007; Pickering 2008).

Dog training at designated sites can displace wildlife species from the immediate area. In cases where training is allowed from April 15 to July 31, it is likely that the displacement can affect breeding success of birds and small mammals in the immediate area.

Dog trials involve the use of horses for judges, trainers, marshals, and sometimes spectators. Horses may trample soil and vegetation, particularly in wet conditions. The presence of many dogs, horses, and people can cause impacts to wildlife and cause some to be displaced.

The sounds generated from shooting ranges are related to use levels, facility design, types of firearms discharged, and the surrounding vegetation and topography. The department is not aware of any studies on the effects that shooting ranges have on nearby wildlife populations, but it is expected that the sounds generated can displace wildlife and affect the distribution and abundance of animals in the vicinity of the range. For example, species less sensitive to loud, sudden sounds (e.g., species typically found in urban settings) are more likely to be present near a shooting range than sensitive species.

Aquatic and Wetland Resources

Construction and Operation Related Impacts

Boat launches, canoe access points, and fishing piers alter the shoreline of the waterbodies. Erosion during construction may cause minor impacts to the water body. Stormwater runoff from impervious surfaces associated with these facilities can enter waterbodies. Department design standards and best management practices limit the impact of these facilities on water resources.

Participation Related Impacts

Trail riders that leave designated trails and enter wetlands and waterbodies can cause extensive and long-lasting ecological damage. This can be a particular problem with ATV, UTV, OHV, and 4WD riders that leave designated routes and trails. The use of trail ambassadors and monitoring can be an effective management approach to minimize problems.



As with terrestrial resources, invasive species are a substantial problem in aquatic habitats. Lake associations throughout the state sponsor a range of activities and educational measures to minimize the spread of aquatic invasive species.

Impacts to Cultural, Historical, or Archaeological Resources

Construction and Operation Related Impacts

The development of recreation facilities has the potential to unearth archaeological sites. During the facility design phase, the DNR Archaeologist is consulted to assess the design and siting for any potential impacts. If an archaeological resource is discovered during the clearing or grading process for facility development, all appropriate actions are taken in accordance with applicable laws and regulations.

Participation Related Impacts

Trail users that leave designated trails and enter areas with cultural, historic or archaeological resources can cause damage. Motorized uses can cause extensive and long-lasting damage. The use of trail ambassadors and monitoring can be an effective management approach to minimize problems.

Impacts to Recreation Participation

Others Participating in the Same Activity

In most activities, participants rarely affect other participants in the same activity. Rather, most participants enjoy interacting with others and sharing experiences and stories. The few situations where conflicts among participants in the same activity can occur are when the activity involves some form of consumption (e.g., hunting, fishing, or gathering edibles).

Others Participating in Different Recreation Activities

There are many ways that participants in different activities may affect each other. In most cases these interactions are positive or at least neutral. Occasionally, there are adverse impacts, many of which are resolved over time through revised management, design and enforcement.

People participating in motorized recreation can adversely impact participants in other types of non-motorized recreation activities. Conflicts can be particularly acute with people pursuing activities that benefit from quiet settings (e.g., hunting, bird watching, nature study & appreciation, horseback riding, and primitive camping). This conflict can be amplified in situations where motorized riding opportunities are concentrated in an area (such as with a series of loop trails) rather than a longer-distance trail passing through an area.

Conflicts between ATV/UTVs and snowmobiles can also arise related to impacts to the snow base of snowmobile trails. In addition, in some cases snowmobile trails on private lands do not allow ATV/UTV use.

Conflicts between snowmobiling and cross-country skiing often occur if these uses are placed on the same trail. Many rail-trails that allow bicycling during warm weather months are designated as snowmobile trails in the winter. With the growing popularity of winter/fat-tire biking, many of these rail-trails are now also used by



bicyclists in the winter. When both snowmobiles and fat-tire bikes use the same trail, conflicts and safety issues can be a serious concern.

In situations where horseback riding and other uses are allowed on the same trail some conflicts can emerge. The most common conflicts are caused by off-road and mountain bikers approaching horses too quickly and scaring them. These situations can be minimized through education, trail design, and orienting horse and other trail users in opposite directions.

Dog trials are competitive events that require larger areas (up to and sometimes greater than 1,000 acres) and are not compatible with other types of recreation occurring in the same location during these events. As such, they require an area to be essentially closed to other uses, which some visitors may oppose.

Impacts to Local and State Economies

Construction and Operation Related Impacts

Construction and operation of recreation facilities generates economic activity in the surrounding communities. In some cases, facilities (especially trails) are constructed and maintained by volunteers. The amount and duration of the economic impact associated with facility construction and maintenance is a function of its scale and nature.

Participation Related Impacts

All types of participation in outdoor recreation result in some costs and benefits. Costs to providers include items such as land acquisition and facility development, maintenance, and ongoing management. Costs to participants include items such as fees, equipment, and travel expenses. Of course, one entity's costs are another's benefit. That is, spending that occurs throughout the outdoor recreation "ecosystem" – on construction supplies, hunting licenses, mountain bikes, hotel rooms, bait, and the myriad of other items that are associated with participation – pumps money through the local and state economy. This direct spending also generates indirect economic activity (for example, restaurants that feed anglers stopping for lunch buy food and other supplies from local farmers and distributors) and induced activity (the salary of the construction worker who builds a fishing pier at a state forest that is spent on food, clothes, rent, and other daily expenses).

This description of economic impacts focuses on those that are *travel-related*. Considerable economic activity is also associated with purchasing and maintaining equipment (e.g., boats and trailers, firearms, mountain bikes, fishing rods, kayaks, skis, sleeping bags, etc.), acquiring land or recreational properties, purchasing and boarding horses, and a wide assortment of other things such as joining clubs and organizations, insurance, and taking classes to become proficient. These can be considerably harder to quantify and assign appropriately to one's participation in outdoor recreation. As a result, these economic outcomes are not included here.

Many studies have evaluated the travel-related economic impact of different types of public recreation properties as well as the economic impact of specific activities. There are wide ranges in the economic benefits that different properties and activities generate. Properties that draw many people from longer distances (and thus generate more multi-day trips) tend to have substantially higher economic benefits on nearby communities than properties that typically draw local residents for shorter visits.

Similarly, participants in some outdoor pursuits tend to generate more travel-related economic activity than others. This difference is commonly a function of the activity and the length of typical outings. As an example, camping is, by definition, at least a two-day (and often longer) event. A person's willingness to travel is often tied



to the length of their stay and thus people engaging in multi-day events often travel several or many hours to reach their destination. The longer their trip, the more travel expenses they will incur (fuel, food, accommodations) and the more likely they will spend money away from home. Similarly, participants in motorized activities tend to spend more than non-motorized recreationists because they incur fuel costs as well as costs associated with their machines.

In general, people spend about \$25/day on travel-related expenses (fuel, food and drinks, firewood, fees, bait, and other similar supplies) on most types of outdoor recreation trips. Of course, there is a wide range in this figure depending on how far people travel, the expensiveness of places they visit while on their trip, and the types of supplies associated with the activity. At the low end of the spectrum, someone who drives 10 minutes to a property for a 45-minute walk with their dog might incur expenses less than \$2. At the higher end, participants in motorized activities are estimated to spend between \$40 and more than \$100/day.

People that go on multi-day trips incur costs associated with their lodging. These costs vary considerably depending on where they spend the night(s). Some stay in hotels, inns, or similar accommodations while others sleep in tents or RVs at campgrounds.

A note about this spending: A note of caution when thinking about the economic impact of outdoor recreation (or any activity): the economic activity associated with different outdoor pursuits is not “new” money or value that is created. Rather, it is money spent at one place for a specific purpose. Therefore, by definition, it is not spent at a different place for another purpose.

As an example, let’s examine a trip that Sara and Bill recently took. They live in Waukesha and went to the Kettle Moraine State Forest (KMSF) for a mountain bike ride. Sara owns a bike, but Bill needed to rent one, which he did for \$40 at a shop near the trailhead. The couple bought a daily vehicle admission sticker and state trail passes for a total of \$18. After their ride they stopped at a local café for lunch that cost \$25. Bill wanted to sight in his rifle for an upcoming hunting trip, so they stopped at the shooting range on the property. While Bill was busy with that, Sara went to a nearby gift shop and bought a \$15 tee-shirt for her nephew’s birthday. Bill shot \$10 worth of bullets getting his rifle in order and the entrance fee at the range cost him \$14. On their way back home, they stopped at a roadside farm market and bought some apple cider and vegetables for \$6. During their trip they drove a total of 65 miles and, assuming the standard mileage rate of \$0.535/mile, this cost the couple \$35. In total, their day’s adventure cost them \$163.

Of course, they didn’t have to go on the trip. Instead they could have gone to an art show in Milwaukee or stayed home and done chores around the house. They still would have had lunch, but it may have cost them only \$10 at home. Bill would still need to sight in his rifle, so he would have to spend that money sooner or later. Sara still would have bought her nephew a birthday present for about \$15, but she might have done that online. The cider and vegetables could have been purchased at their local grocery store. The money that they elected to spend because of their trip included \$40 for the bike rental, an extra \$15 on eating lunch out at a café, \$32 in entrance-related fees, and \$35 in gas and wear on their car for a total of \$122. Given what a great time they had, they both think it was definitely worth the cost.

What is sometimes not well recognized is that an important outcome of their trip was the transfer of their money from where they live (in a city) out to the rural parts of the state. Indeed, one of the biggest economic benefits of outdoor recreation is that it facilitates the movement of money from larger cities to small towns throughout the state (and country). Of course, much money flows into cities from rural residents seeking various goods and services that are not available where they live. The outdoor recreation industry helps counteract some of this flow. Just as Wisconsin competes with other states to attract outdoor recreation enthusiasts (and thus bring “outside money” into the state), so too local communities compete with each other to attract visitors from other places.



Social Impacts

Participation Related Impacts

Participation in outdoor recreation can affect nearby property owners and residents. For example, in instances where motorized recreation routes and trails are located near residential properties, the sounds and exhausts generated by riders can cause adverse impacts. Similarly, shooting ranges generate sounds that, depending on a number of factors including site design, topography, wind direction, and shooting direction, can be noticeable for miles. This can substantially negatively affect surrounding landowners and residents. Mitigating measures can include time of day limits, use of shooting sheds with baffles, and limits on the types of arms and munitions allowed. Potential new shooting ranges are often opposed by nearby residents over concerns about how the sounds will impact their quality of life and the value of their property.

Dog training can involve the discharge of firearms. In some cases, blanks are fired to acclimate the dog to the sounds of firearms. In other cases, licensed trainers can bring, release, and shoot captive-raised animals (usually partridges, pheasants, or ducks) for their dogs to practice retrieving. Generally, the level of use at any given time at dog training grounds is low since people prefer to train their dogs with few distractions. If there are more than a couple of people using a training ground, others that arrive will typically find a different place or return at a different time rather than attempt to train in a crowded situation. The noise of occasional gun shots can be upsetting to some neighbors or other people visiting the property. Most dog training grounds on department lands are between 40 and 200 acres and are located on State Wildlife Areas.

Of course, participation in outdoor recreation has many positive social benefits. Participation in group activities brings together friends and families, including multi-generational gatherings. Dog training and trialing are critical components of ensuring that well-trained dogs are used in different types of hunting. Horseback riding is one of the oldest forms of outdoor recreation and travel. Opportunities for riding help secure a link to previous ways of life and the traditions associated with the state's earliest days. And in addition to the benefits of providing gun owners with opportunities to practice gun safety, shooting ranges allow hunters to improve marksmanship and sight in their firearms.

Possible Cumulative Effects of Recreation Participation on Department Properties

The most likely cumulative impact from the public's recreational use of department properties is the improvement in their physical and mental health. Numerous studies have shown the health benefits of outdoor recreation, including eating wild fish and game. Although many people enjoy combining multiple activities within a trip (for example, camping and hunting, fishing and canoeing, or bird watching and hiking), these rarely result in cumulative impacts that are noticeable.

Negative cumulative impacts to the physical environment as well as to wildlife can occur if an area is used by many people continually (e.g., a popular campground) or for many types of activities concurrently or over time (e.g., an area that provides hiking, mountain biking, horseback riding, and OHM riding on separate trail systems within close proximity).

Possible Risks Associated with Recreation Participation on Department Properties

Participants in all outdoor activities bear the risk of physical injury. Of course, some activities such as mountain biking and rock climbing can be riskier than others (e.g., hiking, bird watching, and canoeing).



Possible Precedents Associated with Providing Opportunities for Recreation Participation on Department Properties

Department properties have provided high-quality experiences for a wide range of outdoor recreation activities for over 100 years. Occasionally, in response to public demand, the department provides new or different opportunities at properties. Similarly, new recreation activities are continually developed (e.g., winter “fat tire” biking or geocaching) and the department responds by providing opportunities for these new activities. These changes set a precedent at a property and are typically supported by some and opposed by others. In many cases, opposition is driven by a desire by existing users to “keep things the way they are” and misunderstanding the demand for new recreational uses and their actual impacts (positive and negative). It is not uncommon for the department (and other public land owners) to provide a new recreation opportunity that is initially opposed by current visitors to a property who later conclude that their fears and concerns did not materialize.

Degree and Nature of Controversy Associated with Recreation Participation on Department Properties

Few aspects related to the management of department lands generates more controversy and disputes than the recreational uses allowed and provided for. By design, the master planning process is the venue for the public discussion and debate on the future uses of department properties. The process is designed to provide an open forum for the full spectrum of advocates, neutral parties, and opponents to articulate their perspectives and, hopefully, to better understand others’ viewpoints.

Some recreation activities draw more controversy than others. Activities tend to generate opposition if they are perceived to have environmental impacts (e.g., people opposed to noises generated by motorized recreation activities and shooting ranges), social concerns (e.g., people ethically opposed to hunting and trapping), or economic impacts (e.g., people opposed to establishing rail-trails due to a concern that their homes will lose value).

In cases where existing or proposed recreation uses are controversial the department must still make decisions about what activities should and should not be allowed. As such, these outcomes will disappoint some and please others.

References

- Campbell, J.E. and D. Gibson. 2001. The effect of seeds of exotic species transported via horse dung on vegetation along trail corridors. *Plant Ecology* 157(1): 23-53.
- EPA. 2001. *Frequently Asked Questions: Environmental Impacts of Recreational Vehicles and other Nonroad Engines*. U.S. Environmental Protection Agency, Office of Transportation and Air Quality, Environmental Fact Sheet EPA420-F-01-030.
- EPA. 2005. *Best Management Practices for Lead at Outdoor Shooting Ranges*. U.S. Environmental Protection Agency, Region 2, EPA-902-B-01-001, revised June 2005.
- Gower, S.T. 2008. Are horses responsible for introducing non-native plants along forest trails in the eastern United States? *Forest Ecology and Management* 256: 997-1003.
- Pickering, C.M. 2008. *Literature Review of Horse Riding Impacts on Protected Areas and a Guide to the Development of An Assessment Program*. Environmental Protection Agency: Brisbane, Australia.



- Quinn, L.D., A. Quinn, M. Kolipinski, B. Davis, C. Berto, M. Orcholski, and S. Ghosh. 2010. Role of horses as potential vectors of non-native plant invasion: An overview. *Natural Areas Journal* 30(4): 408-416.
- Wells, F.H. and W. Lauenroth. 2007. The potential for horses to disperse alien plants along recreational trails. *Rangeland Ecology and Management* 60(6): 574-577.

